Chapter 4

Comorbidity of anxiety and depression

Comorbidity of anxiety and depressive disorders: A comparative population study in Western and non-Western inhabitants in the Netherlands


ABSTRACT

Background
Overlap of depressive and anxiety symptoms is supposedly more common in non-Western populations. This can lead to diagnostic uncertainty and undertreatment.

Aims
The aim of this study was to assess cross-cultural differences regarding the comorbidity of anxiety and depressive disorders in a comparative population study.

Method
In a random urban population sample, stratified for descent, in Amsterdam, the Netherlands, diagnostic interviews were held by bilingual interviewers. Diagnoses of anxiety and depressive disorders, based on the Composite International Diagnostic Interview, were obtained for 307 native Dutch subjects, 205 Turkish-Dutch subjects and 186 Moroccan-Dutch subjects.

Results
The prevalence rate of comorbid anxiety and depressive disorders was higher in Turkish-Dutch (9.8%) and Moroccan-Dutch (3.8%) subjects compared to native Dutch subjects (2.3%). However, this could be explained by differences in baseline prevalence rate and level of severity of the separate disorders. The onset order of anxiety disorders and depressive disorders was comparable in each ethnic group.

Conclusions
The high prevalence rate of comorbid anxiety and depressive disorders in non-Western immigrants in the Netherlands necessitates assessment and treatment of both disorders. We found no indication of a –culturally influenced- stronger overlap between anxiety and depressive disorders in non-Western immigrants in the Netherlands.
INTRODUCTION

Non-Western immigrant groups in Europe are at high risk for anxiety disorders and depressive disorders (Carta et al., 2005; de Wit et al., 2008; Leveque et al., 2007), although rates differ substantially between countries, specific minority groups and gender groups (Bhugra 2003; Bhugra & Mastrogianni, 2004; Breslau et al., 2006; Swinnen & Selten, 2007). For West-European and North-American psychiatrists, diagnosis and treatment of immigrant patients poses challenges. Diagnostic uncertainty arises as non-Western immigrant patients seemingly present emotional distress as a mix of anxiety and depressive symptoms. The Diagnostic and Statistical Manual of Mental Disorders fourth Edition (DSM-IV) explicitly warns in the section on the major depressive episode: “Culture can influence the experience and communication of symptoms of depression...” Such presentations combine features of the Depressive, Anxiety and Somatoform Disorders.” (American Psychiatric Association (APA), 1994: 324). Apart from older clinical cross-cultural observations, Leff (1973) was one of the first to illustrate this with epidemiological data. He used parts of the Present State Examination (PSE) in the World Health Organization (WHO) International Pilot Study of Schizophrenia (IPSS) to show that patients in developing countries showed less differentiation between the emotions Anxiety, Depression and Irritability than patients in developed countries. Cultural commentary on the extensive overlap between, among others, anxiety and depressive disorders has even given rise to the challenge of commonly used diagnostic classifications (Mezzich et al., 1999; Tseng, 2007). Diagnostic confusion carries the risk of a subsequent inappropriate, and therefore ineffective treatment.

Unfortunately, the relevance of these cross-cultural observations and studies on the overlap of anxiety and depressive disorders is unclear, because epidemiological studies on comorbidity in non-Western migrants are scarce. In this study we aimed to describe comorbidity of anxiety and depressive disorders in a population sample of non-Western immigrants in the Netherlands. From many large population-based studies in Western societies, it is known that the level of comorbidity between depression and anxiety is high (de Graaf et al., 2002; Kessler et al., 1996, 2003, 2005; Merikangas et al., 1996). In general, a higher base line prevalence rate of each of these disorders will lead to a higher co-occurrence of anxiety and depressive disorders by chance (Kraemer, 1995). In addition, ample evidence from international epidemiological studies is available showing that comorbidity is more common in patients with more severe disorders (Das-Munshi et al., 2008; Kessler et al., 1996, 2005; Preisig et al., 2001) In Turkish and Moroccan migrants in the Netherlands, the prevalence of anxiety and depression is high (de Wit et al., 2008), and the average severity of the depressive disorders is higher (Schrier et al., 2010). It might therefore be expected that the prevalence of comorbid anxiety and depressive disorders in these migrant groups is also higher.

Typically, anxiety disorders precede depressive disorders (de Graaf et al., 2003; Kessler et al., 1996, 2003; Merikangas et al., 1996; Wittchen et al., 2000). An additional way to investigate ethnic similarities and differences in the overlap of anxiety and depressive disorders is by comparison of the onset order of the disorders.
In the Netherlands the three major non-Western immigrant groups are from Surinam, a former colony in South America, from Turkey and from Morocco. In this study we focused on first- and second-generation immigrants from Turkey and Morocco, because they are more culturally homogenous than the ethnically, religiously and culturally diverse immigrants from Surinam. Labour migration from Turkey and Morocco, beginning halfway through the 1960s, brought large numbers of non-Western migrants to Europe. Nowadays in Amsterdam, capital of the Netherlands, 14.2% of the population is formed by immigrants from Turkey and Morocco (O+S Research and Statistics, 2009). Both groups typically grew up in rural, underdeveloped areas in their countries of origin and received little education. In the Netherlands their level of integration is low (Social and Cultural Planning Office of the Netherlands, 2004).

This paper aimed to investigate in a comparative population study three questions:

1. Is the prevalence rate of comorbid anxiety disorders and depressive disorders in Turkish and Moroccan immigrants higher than in native Dutch subjects?
2. Can ethnic differences in the prevalence rate of comorbid disorders be explained by differences in prevalence and severity of the separate disorders?
3. Does the order of onset of comorbid anxiety disorders and depressive disorders differ between immigrants and native Dutch subjects?

MATERIAL AND METHODS

Sample and response

The study population was derived from a general health survey conducted by the municipal health service of the city of Amsterdam in 2004. Migrant status was defined by country of birth outside the Netherlands (first generation immigrants) or country of birth of one or both parents outside the Netherlands (second generation immigrants). Respondents who were born in the Netherlands and whose parents were both born in the Netherlands were considered native Dutch subjects (Statistics Netherlands, 2009). For the first phase, the general health survey, a random sample of the Amsterdam population (age 18+) was stratified for age and descent (N = 3,937). The overall response rate was 44.1%. The response was lower among Moroccan-Dutch citizens (38.7%) than among native Dutch (45.8%) or Turkish-Dutch citizens (49.6%; p < 0.001) (Agyemang et al., 2006). The great majority of the respondents was first-generation immigrant (94.6%). First-generation immigrants were more likely to participate in the study than second-generation immigrants in all three migrant groups: 50.7% response in first generation versus 31.9% response in second-generation Turkish-Dutch citizens (p = 0.003); 39.2% response in first generation versus 27.4% response in second-generation Moroccan-Dutch immigrants (p = 0.035). After weighting the sample for age, gender and ethnicity, respondents reported an annual income and an unemployment rate comparable to that of the Amsterdam population.

The results presented in this article are based on a second phase, consisting of a more detailed assessment of mental health in 2005. We limited inclusion to native Dutch subjects and first- and second generation migrants from Turkey and Morocco. Respondents from the first phase who
had agreed to participate in the second assessment were invited for an interview at home by bilingual interviewers. Results were obtained from 725 subjects (67.4% response): 321 native Dutch, 213 Turkish-Dutch, 191 Moroccan-Dutch. Response was lower among Turkish-Dutch and Moroccan-Dutch subjects (62.2% and 70.5% respectively) than among native Dutch subjects (76.9%; p < 0.001). Respondents and non-respondents of each of the three migrant groups did not differ significantly with respect to first/second generation status, nor with respect to their level of acculturation. Analyses also showed no significant differences between respondents and non-respondents regarding mental health condition as measured by the Kessler Psychological Distress Scale (K10) and no differences in use of mental health care or psychopharmacologic drugs (de Wit et al., 2008).

Subjects with incomplete information on Composite International Diagnostic Interview (CIDI) anxiety disorder or depressive disorder status were excluded from the analysis (i.e. 14 (4.4%) native Dutch subjects, 8 (3.8%) Turkish-Dutch subjects and 5 (2.6%) Moroccan-Dutch subjects).

The study procedures were approved by the ethical commission of the Amsterdam Medical Center.

Assessments
To minimize misunderstandings due to insufficient mastery of the Dutch language, all respondents were interviewed by bilingual interviewers matched on gender and ethnicity. Interviews were held in Dutch, Turkish, Moroccan or Berber (a non-written language among Bedouins in western North Africa). All interviewers were trained during a full-time week and intensively coached during the period of data-collection. All interviews were audio taped. Questionnaires were translated into Turkish, and the key-terms in Moroccan Arabic. After that they were translated back into Dutch. When the translation differed from the original Dutch questionnaire, changes were discussed with the translators and adjusted (de Wit et al., 2008).

Socio-demographic information was obtained on age, gender, country of birth and country of birth of parents, age at immigration, education in country of origin and in the host country and current employment status.

Anxiety disorders and depressive disorders were diagnosed using the Composite International Diagnostic Interview (CIDI), version 2.1, sections D and E (WHO, 1997), which conforms with the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria (APA, 1994). Post-traumatic stress disorder and simple phobia were excluded. Bipolar disorders (section F) were not assessed. Standard diagnostic hierarchy rules were used for generalized anxiety disorder. The CIDI is a structured psychiatric interview developed by the WHO for use in cross-national studies. The validity and reliability of the CIDI has been to be adequate in a number of field trials around the world, including trials in Turkey, but has not been assessed in Morocco (Andrews & Peters, 1998; Wittchen, 1994). For Turkish-speaking respondents the official Turkish translation of the CIDI was used. The official Arabic CIDI translation was used as a source of information to translate the key-terms into Moroccan Arabic.
The onset of the disorders was established in the CIDI interview. For each disorder, respondents were questioned about the age of onset of the first episode.

Analyses
Comorbidity was defined as the presence of (1) one or more one-year DSM-IV anxiety disorder(s) (panic disorder, agoraphobia, social phobia and/or generalized anxiety disorder) and (2) one or more one-year DSM-IV depressive disorder(s) (major depressive disorder and/or dysthymic disorder). Severity of the depressive disorder was defined in three levels, following the classification of the DSM-IV specifiers of severity of the most recent episode: 1) dysthymic disorder only or major depressive disorder, mild; 2) major depressive disorder, moderate; 3) major depressive disorder, severe.

Ethnic differences in the prevalence of pure and comorbid anxiety disorders and depressive disorders were tested by $\chi^2$ tests.

To study whether ethnic differences in the prevalence of a comorbid disorder resulted from differences in the prevalence of the separate disorders, comorbidity was tested in a logistic regression model. In this model the association between the prevalence of anxiety disorders (dependent variable) and the prevalence of depressive disorders (independent variable) was studied. Ethnic group and interaction terms (prevalence of depressive disorders x Turkish ethnicity, and prevalence of depressive disorders x Moroccan ethnicity) were included as covariates. The contribution of the interaction terms to the model was tested for statistical significance.

To test whether ethnic differences in the prevalence of a comorbid disorder were also influenced by the severity of the depressive disorder, a second logistic regression analysis was performed. Again the prevalence of anxiety disorders was the dependent variable. The independent variables included were depressive disorder severity in four grades (no depressive disorder or depressive disorder in three levels of severity as defined above), ethnic group and interaction terms (depressive disorder severity x Turkish ethnicity, and depressive disorder severity x Moroccan ethnicity). Again the contribution of the interaction terms to the model was tested for statistical significance.

The order of onset of an anxiety disorder versus a depressive disorder in subjects with current comorbidity (one-year prevalence) of an anxiety and a depressive disorder was examined. The age of onset of anxiety disorders was calculated as the earliest age of onset of any of the lifetime anxiety disorders. Similarly, the age of onset of depressive disorders was defined as the earliest age of onset of the lifetime major depressive disorder or dysthymic disorder. Data on age of onset were missing in two subjects. Statistical testing was not feasible due to the small numbers of cases (In a $\chi^2$ test 7 of the 9 cells had an expected count of less than 5, with a minimum expected count of 0.75).
RESULTS

Socio-demographic characteristics of the population sample

Most Turkish and Moroccan immigrants migrated from their country of origin as young adults (Table 1). In the majority of cases they preferred to be interviewed in their native language. Both immigrant groups had received little education and were more often unemployed compared to native Dutch subjects.

The distribution of age and sex was different in the three study groups. This reflects both differences in the composition of the population of Amsterdam as well as differences in response rates.

Table 1 | Sociodemographic characteristics of native Dutch, Turkish-Dutch and Moroccan-Dutch respondents

<table>
<thead>
<tr>
<th></th>
<th>native Dutch (N=307)</th>
<th>Turkish-Dutch (N=205)</th>
<th>Moroccan-Dutch (N=186)</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years: M (SD)</td>
<td>54.1 (14.8)</td>
<td>47.5 (14.1)</td>
<td>49.5 (14.5)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Gender, female</td>
<td>58.6 %</td>
<td>61.5 %</td>
<td>47.8 %</td>
<td>0.016</td>
</tr>
<tr>
<td>Age at immigration, years: M (SD)b</td>
<td>-</td>
<td>25.4 (10.6)</td>
<td>27.3 (10.3)</td>
<td></td>
</tr>
<tr>
<td>Second-generation immigrant</td>
<td>-</td>
<td>7.3 %</td>
<td>7.0 %</td>
<td></td>
</tr>
<tr>
<td>Language preference: non-Dutchc</td>
<td>-</td>
<td>88.8 %</td>
<td>68.7 %</td>
<td></td>
</tr>
<tr>
<td>Education: none or primary</td>
<td>19.7 %</td>
<td>59.3 %</td>
<td>60.2 %</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Employment status: unemployedd</td>
<td>7.1%</td>
<td>26.1 %</td>
<td>22.8 %</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

a Means were tested with ANOVA, proportions with χ² tests.

b First-generation immigrants only.

c Language used during interview. For Turkish-Dutch respondents, native language is Turkish. For Moroccan-Dutch respondents, native language is Moroccan-Arabic or Berber language.

d ‘Not unemployed’ includes people with paid jobs and students, housewives and retired elderly.

Ethnic differences in the prevalence of comorbid anxiety disorders and depressive disorders

The prevalence estimates, weighted for age and gender, for one-year anxiety and mood disorders in the population of Amsterdam have been published previously (de Wit et al., 2008). The estimated one-year prevalence rate of anxiety disorders was 6.8% in Dutch inhabitants, 9.6% in Turkish-Dutch inhabitants and 8.3% in Moroccan-Dutch inhabitants. For depressive disorders these estimates were 10.3%, 22.4% and 9.8 % respectively.

Table 2 presents the crude one-year prevalence figures of anxiety and depressive disorders. The three ethnic groups differed significantly in the distribution of none, pure and comorbid anxiety and depressive disorders (χ² = 32.64, df = 6, p <0.001). In Turkish-Dutch respondents the one-year prevalence of a comorbid anxiety disorder and a depressive disorder (9.8%) was higher than in Moroccan-Dutch or native Dutch respondents (3.8% and 2.3% respectively). This difference was statistically significant when tested against no disorder or pure disorders only (χ² = 15.50, df = 2, p <0.001).
### Table 2 | One-year DSM-IV disorders by ethnic group

<table>
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<tr>
<th></th>
<th>Native Dutch</th>
<th></th>
<th>Turkish-Dutch</th>
<th></th>
<th>Moroccan-Dutch</th>
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<th>p</th>
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<tr>
<td></td>
<td>n (%)</td>
<td></td>
<td>n (%)</td>
<td></td>
<td>n (%)</td>
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<tr>
<td>No disorder</td>
<td>258 (84.0)</td>
<td></td>
<td>145 (70.7)</td>
<td></td>
<td>165 (88.7)</td>
<td></td>
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</tr>
<tr>
<td>Anxiety disorder only</td>
<td>14 (4.6)</td>
<td></td>
<td>8 (3.9)</td>
<td></td>
<td>6 (3.2)</td>
<td></td>
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<tr>
<td>Depressive disorder only</td>
<td>28 (9.1)</td>
<td></td>
<td>32 (15.6)</td>
<td></td>
<td>8 (4.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comorbid anxiety and depressive disorder</td>
<td>7 (2.3)</td>
<td></td>
<td>20 (9.8)</td>
<td></td>
<td>7 (3.8)</td>
<td></td>
<td>&lt; 0.004</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>307</strong></td>
<td></td>
<td><strong>205</strong></td>
<td></td>
<td><strong>186</strong></td>
<td></td>
<td>&lt; 0.004</td>
</tr>
<tr>
<td>Any disorder</td>
<td>49/307 (16.0 %)</td>
<td></td>
<td>60/205 (29.3 %)</td>
<td></td>
<td>21/186 (11.3 %)</td>
<td></td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Proportion of comorbid disorders of any disorder</td>
<td>7/ 49 (14.3 %)</td>
<td></td>
<td>20/ 60 (33.3 %)</td>
<td></td>
<td>7/ 21 (33.3 %)</td>
<td></td>
<td>0.057</td>
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<th></th>
<th>Native Dutch</th>
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<th>Turkish-Dutch</th>
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- DSM-IV panic disorder, agoraphobia, social phobia and/or generalized anxiety disorder.
- DSM-IV major depressive disorder and/or dysthymic disorder.
- Anxiety disorder and/or depressive disorder.
- Tested by χ² test: comorbid disorder versus no disorder or pure disorder only.
- Tested by χ² tests: all four diagnostic categories.

### Effect of prevalence and severity of anxiety and depressive disorders on comorbidity

The strength of the association (odds ratio (OR)) between presence of anxiety disorders and presence of depressive disorders was 4.6 in the native Dutch reference group. Table 3 presents the results of the logistic regression analysis to study ethnic differences in this association. Compared to native Dutch subjects as a reference group (OR set to 1), this association was 2.5 times stronger (p = 0.188) in Turkish immigrants and 5.2 times stronger (p = 0.047) in Moroccan immigrants.

### Table 3 | Ethnic differences in comorbidity of one-year DSM-IV depressive disorder* with one-year DSM-IV anxiety disorder

<table>
<thead>
<tr>
<th>Ethnic differences in association of presence of depressive disorder with presence of anxiety disorder</th>
<th>Ethnic differences in association of severity of depressive disorder with presence of anxiety disorder</th>
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<tbody>
<tr>
<td>OR&lt;sup&gt;c&lt;/sup&gt;</td>
<td>p&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Native Dutch</td>
<td>1</td>
</tr>
<tr>
<td>Turkish-Dutch</td>
<td>2.5</td>
</tr>
<tr>
<td>Moroccan-Dutch</td>
<td>5.2</td>
</tr>
</tbody>
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<table>
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<tr>
<th></th>
<th>Native Dutch</th>
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<th>Turkish-Dutch</th>
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</table>

- DSM-IV major depressive disorder and/or dysthymic disorder.
- DSM-IV panic disorder, agoraphobia, social phobia and/or generalized anxiety disorder.
- Logistic regression model with presence of depressive disorder, ethnicity and interaction terms predicting presence of 1-year anxiety disorder; odds ratios (OR) of interaction terms.
- Significance of ethnic difference in ORs, Dutch are reference group, two sided test.
- Severity of depressive disorder in four grades (no depressive disorder; dysthymic disorder only or major depressive disorder, mild; major depressive disorder, moderate; major depressive disorder, severe). Logistic regression model as in <sup>c</sup>, with severity of depressive disorder instead of presence of depressive disorder as predictor.
As expected, with each increase in level of depressive disorder severity, the percentage of comorbid anxiety disorders increased: 12.8% of subjects with a dysthymic disorder or mild major depressive disorder had a comorbid anxiety disorder, whereas 40.0% and 52.2% had a comorbid anxiety disorder when a moderate or a severe depressive disorder was present, respectively. This pattern was present in native Dutch, Turkish-Dutch and Moroccan-Dutch subjects (Figure 1).

**Figure 1** | Percentage of subjects with a DSM-IV anxiety disorder\(^a\) among subjects without or with a DSM-IV depressive disorder,\(^b\) split by depressive disorder severity,\(^c\) in three ethnic groups

\(^a\) One-year DSM-IV panic disorder, agoraphobia, social phobia and/or generalized anxiety disorder.
\(^b\) One-year DSM-IV major depressive disorder and/or dysthymic disorder.
\(^c\) Severity of depressive disorder in four grades: none = no depressive disorder; mild = dysthymic disorder only or major depressive disorder, mild; moderate = major depressive disorder, moderate; severe = major depressive disorder, severe.

The last two columns of Table 3 show the results of the logistic regression analysis to study ethnic differences in the association of depressive disorder severity with the prevalence of anxiety disorders. Compared to native Dutch subjects, the odds ratio for the strength of the association between depressive disorder severity and the presence of anxiety disorders for Turkish-Dutch and Moroccan-Dutch subjects was closer to 1 and no longer statistically significant.

**Onset order of anxiety and depressive disorder**

The proportion of subjects with the onset of any anxiety disorder preceding (anxiety < depression), concomitant with (anxiety = depression), and post-dating (anxiety > depression) the onset of any depressive disorder is presented in Table 4. In the majority of subjects, the onset of the anxiety disorder preceded the onset of the depressive disorder (56.3%). Inspection of the data across ethnic groups revealed that the patterns of onset order were similar.
**DISCUSSION**

This population study in the Netherlands shows that the prevalence of comorbid anxiety disorders and depressive disorders is higher in non-Western immigrants than in native Dutch inhabitants. In Turkish-Dutch subjects the prevalence rate of one-year comorbid anxiety and depressive disorders was as high as 9.8%, compared to 3.8% in Moroccan-Dutch subjects and 2.3% in native Dutch subjects. Interestingly, no ethnic differences in the strength of the association of anxiety and depressive disorders were found after controlling for prevalence rate of the separate disorders and for severity level of the depressive disorder. In a logistic regression analysis with native Dutch subjects as a reference group, the association between the prevalence of a depressive disorder (none or with three levels of severity) and the prevalence of anxiety disorders was only 1.1 times stronger ($p = 0.84$) in Turkish immigrants and 1.6 times stronger ($p = 0.22$) in Moroccan immigrants. Finally, the orders of onset of the anxiety disorder and the depressive disorder in the Turkish-Dutch, Moroccan-Dutch and native Dutch study groups were similar. In the majority of comorbid cases in all three ethnic groups, a similar pattern emerged wherein the onset of the lifetime anxiety disorder preceded the onset of the lifetime depressive disorder.

The high prevalence of comorbid anxiety and depressive disorders in Turkish-Dutch and Moroccan-Dutch immigrants clearly has clinical implications. Comorbid disorders have been found to be more severe and persistent than pure disorders and have a poorer treatment outcome (Kessler et al., 1996, 2005; Roy-Byrne et al., 2000). Poor treatment outcome in non-Western immigrant patients is a frequently expressed concern of clinicians. Several explanations have been suggested, including inappropriate help-seeking behaviour, under-detection, cross-cultural diagnostic difficulties and inappropriate treatment (Fassaert et al., 2009a; Kirmayer, 2001; Simon et al., 2002; Swinnen & Selten, 2007). Recent studies in the Netherlands have shown comparable access and largely comparable administrative indicators (frequency of visits, drop-out) of psychiatric treatment of ethnic minority patients with depressive or anxiety disorders (Fassaert et al., 2009b, 2010). In the USA, decline in ethnic disparities in detection and treatment of these common mental disorders has also been noticed (Stockdale et al., 2008). Therefore, concerns of ethnic disparities should now focus on the quality of psychiatric treatment. On the base of the present results it can be hypothesized that underdiagnosis of comorbidity of anxiety and depressive disorders may play a...
Comorbidity of anxiety and depression requires treatment designed for each of the concomitant disorders in order to be effective (APA, 2009; National Institute for Clinical Excellence (NICE), 2004a, 2004b).

The results of this study nuance earlier calls for culturally adapted diagnostic assessment of depressive disorders and anxiety disorders. After controlling for differences in prevalence rate and severity level of the separate disorders, there was no indication of a stronger overlap of anxiety and depressive disorders found in the Turkish and Moroccan immigrant groups, compared to the native Dutch group. In other words, this study population of mainly low-educated and poorly-integrated non-Western immigrants showed, compared to native Dutch subjects, no higher tendency to combine anxiety and depressive symptoms in a structured diagnostic interview. This fits in with several cross-national epidemiological studies which show that non-Western patients do express core depressive symptoms (Bhugra & Mastrogianni, 2004; Simon et al., 2002). In an earlier study based on the same dataset, this group showed that their depressive symptom profile is comparable with that in native Dutch subjects (Schrier et al., 2010). It should be noted, however, that this applies only to structured diagnostic interviews. In an open interview, ethnic differences in symptom presentation might arise more easily due to cultural factors with respect to social norms, help-seeking behaviour, explanatory models, doctor-patient interactions and other factors. Therefore, the use of standard structured diagnostic instruments in the psychiatric assessment of non-Western immigrant patients is recommended.

Limitations

The following methodological issues deserve discussion. First, different response rates in the ethnic groups in both phases of the study was observed. This may have influenced the crude prevalence rates. The findings on ethnic differences in the strength of the association between anxiety and depressive disorders might be biased only if this differential response has resulted in selection of migrants with a higher (or lower) level of acculturation in the final study sample. In the first phase of the sampling, first-generation immigrants were more likely to respond to the general health survey than second-generation immigrants. Responders and non-responders to the second phase of the study did not differ significantly in first/second generation migrant status, nor in level of acculturation. The final study sample of Turkish-Dutch and Moroccan-Dutch respondents consisted mainly of low-educated, first-generation immigrants, who preferred to be interviewed in their native language. Therefore, to the extent that this bias exists, it may have led to an overestimation of the association between anxiety and depressive disorders in the immigrant groups. Second, the number of cases with an anxiety disorder or depressive disorder was small. Therefore the interpretation of the association between anxiety disorders and depressive disorders was based on the size of the OR, rather than just on the statistical significance level. Due to these small numbers, too, the sociodemographic parameters were not included in the logistic regression analyses. Preliminary analyses, however, showed no clear pattern between comorbidity and gender, age and education level. Third, the possibility that the structure of the CIDI interview has influenced the results cannot be excluded. According to the standard instructions, the complete CIDI depression section (section E) has only been administered to
respondents who affirmed at least one of the two probe questions on sadness or loss of interest. Underreporting of these two mood symptoms by respondents of Turkish and Moroccan cultural background cannot be excluded (Smits et al., 2005; Wittchen, 1994). If the Turkish-Dutch and/or the Moroccan-Dutch subjects underreported the probe questions in the depression section of the CIDI, the estimated prevalence rates of pure and comorbid depressive disorder in these groups are likely to be conservative. However, in a recent study by the same group as this, in which both the CD and the Symptom Checklist-90-R were applied, there was no indication of underreporting of mood symptoms in these two immigrant groups (Schrier et al., 2010). More generally, there is a need to explore alternative symptoms and diagnostic criteria by means of qualitative research in addition to quantitative epidemiological surveys. At the same time, studies with standard clinical instruments in non-Western (immigrant) populations facilitate the incorporation of cross-cultural research in the existing body of knowledge on psychiatric disorders (Kohn & Bhui, 2007).

CONCLUSION

Comorbidity of anxiety and depressive disorders is more common in Turkish-Dutch and Moroccan-Dutch subjects than in native Dutch subjects. However, after controlling for prevalence and severity of the separate disorders, the strength of the association did not differ between immigrants and natives. In other words, there was no indication that non-Western, low-educated immigrants were less able than native Dutch citizens to differentiate between anxiety and depressive symptoms. We recommend to assess both disorders by means of standard structured diagnostic instruments. This may help to prevent underdiagnosis and undertreatment of comorbidity of anxiety and depressive disorders.
REFERENCES


